

## CLAIMS

I claim:

1. A method of deboning a poultry wing having a primary segment with a bone extending longitudinally therethrough that was separated from a poultry carcass, a mid-wing segment having a pair of bones extending longitudinally therethrough that is joined at an elbow joint to bone of the primary segment, and a tip segment joined at a tip joint to the bones of the mid-wing segment, comprising:
  - suspending the poultry wing from its tip segment,
  - advancing the suspended wing along a processing path with the outside of the poultry wing facing one side of the processing path,
  - as the wing is advanced:
    - bending the primary segment of the wing at the elbow joint laterally about an elbow guide positioned on the outside of the poultry wing until the elbow joint is opened,
    - as the elbow joint is opened, stretching the tissue extending between the primary segment and the mid-wing segment about the elbow joint,
    - separating the stretched tissue extending between the primary segment and the mid-wing segment at the elbow joint at a position that exposes the end of the bone of the primary segment and separates the primary segment from the mid-wing segment,
    - such that the tissue about the bone end of the primary segment tends to retract from about the bone end and leave the bone end exposed.

- 1     2.     The method of claim 1, wherein the step of advancing the wing comprises:  
2           advancing the wing with the elbow joint extending forwardly in the processing path.
- 1     3.     The method of claim 1, wherein the step of advancing the wing comprises:  
2           advancing the wing with the elbow joint extending rearwardly in the processing path.
- 1     4.     The method of claim 1, wherein  
2           the step of suspending the poultry wing from its tip comprises wedging the tip segment  
3           into a slot of a shackle.
- 1     5.     The method of claim 1, wherein  
2           the step of advancing the suspended wing along a processing path comprises:  
3           advancing the wing along a substantially rectilinear path toward a rotary guide,  
4           placing the mid-wing segment of the wing in contact with the rotary guide,  
5           advancing the wing in unison with and about the rotary guide, and  
6           performing the steps of bending, stretching and separating the wing as the wing  
7           advances with the rotary guide.
- 1     6.     The method of claim 5, wherein  
2           the step of advancing the wing in unison with the rotary guide comprises:  
3           moving a positioning block in unison with the rotary guide, and  
4           engaging the wing with the positioning block.

1 7. The method of claim 5, wherein

2 the step of advancing the wing in unison with the rotary guide comprises:

3 advancing the wing along an arcuate path of approximately 180 degrees about an axis of  
4 rotation of the rotary guide at a speed greater than the speed at which the wing is advances  
5 along the substantially rectilinear path.

1 8. The method of claim 5 and further including the step of:

2 maintaining the mid-wing segment in contact with the rotary guide as the primary  
3 segment is bent about the elbow guide until the elbow joint is opened and the separated.

1 9. The method of claim 1, and after the primary wing segment has been separated from the  
2 mid-wing segment, further including:

3 advancing the mid-wing segment and the tip segment along a second processing path,  
4 as the mid-wing segment and tip segment are advanced along the second processing path:  
5 compressing the wing tip segment,  
6 forcing the mid-wing segment laterally with respect to the tip segment, and  
7 popping the bones of the mid-wing segment laterally from the tip segment.  
8 such that the end of the bones of the mid-wing are exposed.

1 10. A product formed by the process of claim 1.

1 11. The method of claim 1, and further including the step of:

2 cooking the primary segment and the mid-wing segment after they have been separated  
3 from each other, such that the ends of the bones of the segments protrude from the tissue  
4 remaining on the bones, and are available to be grasped by the human hand without touching  
5 the tissue remaining on the bones.

1 12. A method of deboning a plurality of poultry wings, each having a primary segment that was  
2 separated from a poultry carcass with a bone extending longitudinally therethrough, a mid-  
3 wing segment having a pair of bones extending longitudinally therethrough that are joined  
4 at an elbow joint to the bone of the primary segment, and a tip segment joined at a tip joint  
5 to the bones of the mid-wing segment, comprising:

6 suspending the poultry wings from their tip segments,  
7 advancing the suspended wings in sequence along a processing path with the outside of  
8 the right wings facing one side of the processing path and with the outside of the left wings  
9 facing in the same direction as the outside of the right wings,

10 as the wings are advanced:

11 bending the primary segment of both right and left wings with respect to

12 the mid-wing segment at the elbow joint about an elbow guide

13 positioned on the outside of the poultry wings until the elbow joints are

14 opened, and

15 separating the tissue extending between the primary segments and the mid-wing

16 segments at the elbow joints to expose the elbow joints and to separate

17 the primary wing segments from the mid-wing segments.

1 13. Apparatus for deboning a plurality of poultry wings, each having a primary segment that  
2 was separated from a poultry carcass, with a bone extending longitudinally therethrough, a  
3 mid-wing segment having a pair of bones extending longitudinally therethrough that is joined  
4 at an elbow joint to bone of the primary segment, and a tip segment joined at a tip joint to the  
5 bones of the mid-wing segment, comprising:

6 a plurality of shackles for suspending the poultry wings from their tip segments,

7 a conveyor system connected to said shackles and configured for advancing the  
8 shackles in series with their suspended wings along a processing path with the bones of the  
9 wings oriented substantially parallel to the processing path and the outside of the poultry wings  
10 facing one side of the processing path and with left wings oriented opposite to right wings,

11 an elbow guide extending along the processing path adjacent the outside the of the  
12 wings at the level of the elbow joint s of the wings,

13 a bending guide extending along the processing path adjacent the primary segment  
14 configured to bend the primary segment at the elbow joint about the elbow guide and with  
15 respect to the mid-wing segment and open the elbow joint, and

16 a cutting blade intersecting the processing path positioned to separate the tissue  
17 extending about the elbow joint,

18 such that after the tissue is separated by the cutting blade the tissue retracts form about  
19 the ends of the bones, leaving the bones at the ends of the segments exposed.